Zero Retries issue 0172 2024-10-04

Zero Retries is an independent newsletter promoting technological innovation that is occurring in Amateur Radio, and Amateur Radio as (literally) a license to experiment with and learn about radio technology. Radios are computers - with antennas! Now in its fourth year of publication, with 2100+ subscribers.

About Zero Retries

Steve Stroh N8GNJ, Editor

Jack Stroh, Late Night Assistant Editor Emeritus

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Web version of this issue - https://www.zeroretries.org/p/zero-retries-0172

Request To Send

Commentary by Editor Steve Stroh N8GNJ

Paid Subscribers Update

My thanks to **Ryan Tolboom N2BP** for upgrading from a free subscriber to Zero Retries to a **Founding Member Annual Subscriber** this past week!

Founding members are listed in every issue of Zero Retries!

My thanks to **Prefers to Remain Anonymous 3A** for *upgrading* from a free subscriber to Zero Retries to a **Paid Subscriber**… back in June 2023, but I failed to properly record and acknowledge it then. Apologies!

Financial support from Zero Retries readers is a significant vote of support for the continued publication of Zero Retries.

Upcoming Events Countdown

Pacificon 2024 in San Ramon, California, USA on 2024-10-18 thru 20 in *2 weeks*. Tina KD7WSF and I plan to

attend Pacificon 2024 (which makes it “major” to us).

My presentation at Pacificon 2024 - **Tracking Technological Innovation in Amateur Radio** will be on Saturday 2024-10-19 from 16:00 - 16:50 in Contra Costa Salon 2.

See the **Zero Retries Guide to Zero Retries Interesting Events** for additional events.

Light Issue of Zero Retries This Week

Our household experienced “the crud” this week. Not exactly flu, and not COVID-19, but “something” got my wife Tina and I late last week and as a result we’ve both had very low energy, body aches, lots of coughing, etc. It’s persisted into this week, so this won’t be a big issue of Zero Retries. A trusted Zero Retries advisor told me “don’t apologize so much”. Point taken, so I’m just offering this brief explanation.

October!

I grew up in Northwest Ohio and October became my favorite month. In that area, October was usually cooler, but with (blessed) low humidity, bright days, and crisp, clear nights. On the southern shore of Lake Erie, there was usually a light breeze, which moved the dry leaves around with a delightful sound, and occasionally there were snow flurries. October in Northern Ohio was near perfect for me, as are the summers here in Northwest Washington. In a more perfect living arrangement, we would spend October in an extended visit back to my hometown Port Clinton, Ohio.

Have a great weekend, all of you co-conspirators in Zero Retries Interesting Amateur Radio activities!

Steve N8GNJ

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Communications in the Hurricane Helene Aftermath

By Steve Stroh N8GNJ

Some thoughts about communications in emergency situations, in this era.

Here in Zero Retries, I’m not personally equipped to tell the stories of Amateur Radio emergency communications during and after Hurricane Helene, and per the above, especially not equipped this past week. I’ll leave that story for others who are so equipped and have been following those developments more closely. One passing mention that unfortunately I didn’t bookmark was one Amateur Radio Operator in the affected area that pragmatically decided that the situation was a communications emergency in progress, and thus in his mind he was justified in programming a number of portable radios on Amateur Radio (simplex, if I recall correctly) frequencies and handing them out to his neighbors to provide basic communications.

Update - This was the story I read: Helene Aftermath: Long Update, Monday September 30, 2024 by Thomas Witherspoon K4SWL who lives near Swannanoa in Western North Carolina.

The devastating amount of rain and resulting floods resulting from Hurricane Helene centered on Western North Carolina will require *years* to repair. Many communities and individual households are completely cut off, accessible only by air, and in some cases, by mule train. Some small communities were simply scrubbed from the landscape by floodwaters powerful enough to remove entire houses, roadways, and bridges.

Some of the most widespread damage that will be the slowest to repair will be to the electrical power grid in Western North Carolina. Unlike a more typical disaster with damage to transmission lines, poles, and towers… in this event floodwaters damaged the transmission infrastructure - the substations, the transformers, etc. Those will be much tougher to restore than the usual restoration of transmission lines.

I'll guess that there will be similar structural damage to wired communications infrastructure, especially fiber optic facilities given that fiber networks typically require regeneration and distribution every 30 miles or so. If you know what to look for, "fiber huts" are pretty ubiquitous, and looking at them, you can tell that they're simply not equipped to be waterproof when floodwaters completely submerge them.

What I will note is that in the immediate aftermath, Starlink was the only communications system that I saw mentioned in the general reporting from the area. That bears out my experiments and observations from **Zero Retries 0157** - Just In Time for Meadow Day Anniversary - Starlink Mini.

I'll guess that Starlink Mini with its ability to be powered by 12 volts, USB-C, mains power, or solar panels, and its compact size, will quickly become known as the communications system of choice in the aftermath of emergencies. Once you have a Starlink terminal up and running, its Wi-Fi gives you access to Internet at broadband speeds. Thus, turning on "Voice over Wi-Fi" on your mobile phone and connecting to Starlink Wi-Fi instantly restores your personal communications with the rest of the world. While a Starlink Mini's built-in Wi-Fi is limited, it also has an integral Ethernet port so more capable Wi-Fi could be added.

One of the more interesting stories I saw mentioned as part of aftermath of Hurricane Helene was individual helicopter owners / pilots flying to the region of their own volition, begin rescuing people and delivering supplies like bottled water, food, and baby supplies to people that were *completely* isolated because there were no longer *any* accessible roads. For a time, there was no central authority asserted for such operations, and some regrettable "authority assertions" by emergency management agencies saying in effect "we don't want your (helicopter) help - we'll get to the affected folks when we get to them".

The common theme I saw in much of the disjointed recovery effort was a lack of widespread communications capability - from individuals to organizations and even to the mighty Federal Emergency Management Agency (FEMA). The helicopter pilots were an example; from what I observed there was no authority to check in with via their airband radios, There was no airfield nearby (temporary or permanent) or coordination attempt via airband radio. It was amazing to me that watching one YouTube video, a couple with a four place helicopter navigated their way to rescue a family with a baby, and they only knew where to find this family via a post on social media.

I get… I really do… that the immediate aftermath of Hurricane Helene is what Incident Command System (ICS) was designed for. And ICS is a part of formal Amateur Radio emergency communications organizations and of course, public safety organizations. And one of the biggest parts of ICS is in being trained to understand that in trying to help… *you don't become part of the emergency* you're trying to help with. One of the prime tenets of ICS is "thou shall not self-deploy".

But… people *do* self-deploy because they strongly feel that they are in a position to help. One memorable example was the Cajun Navy formed in the aftermath of Hurricane Katrina in 2005. Interestingly, what was then the ad-hoc Cajun Navy is now a formal organization - Cajun Navy Relief. I'll guess that one primary motivation for "doing *something*" is that such folks don't want imagine a future where they might have been able to help, including save lives, and didn't do so.

But ICS is only as good as the number of people that are trained for it (and regularly, re-train for it). Knowing my personal limitations, mostly my inability to do the necessary training, but also my health issues, are reasons I decided to opt out of participation in emergency communications organizations in my area.

ICS also heavily relies on (standardized) resources that are prearranged to be deployed - standardized radio frequencies, prepositioned supplies and systems, formal infrastructure, etc.

Solely in my opinion, where ICS falls down is in being able, or sometimes willingness, to make use of ad-hoc help that becomes available such as the private helicopters that just started showing up. Given the lack of

coordination and the unwelcoming initial reception that private helicopter pilots received from emergency management officials, I'll guess that personal helicopters weren't part of the ICS planning for Western North Carolina.

What I'm observing (and this is a very preliminary, bleeding edge observation) is that for the first time, ubiquitous communications over a widespread disaster area *are now accessible to everyone* who have resources that they wish to contribute and to be coordinated1. The *Starlink Mini* unit has truly changed communications. Starlink Mini can be carried and used by anyone from a backpack to the mule trains to personal helicopter pilots. I've seen Starlink Mini being suction-cupped to vehicle sunroofs, to backpacks, to integrated battery / protective cases such as the Star-Batt Mini which is only one of many such units to combine a battery and easy storage, protection, and deployment of a Starlink Mini.

With a Starlink Mini, and its integrated Wi-Fi, you can check in on a phone app to a website and start seeing where you can help, and stay in communication. Again, I'm not positing that one *should* do so… don't show up and end up becoming part of the emergency… But now… such a thing is possible, and the idea of "second responders" should, I think, begin to be considered.

And… *Meshtastic*. Many… perhaps in the end *most* of the Comments and Reply Comments about FCC Docket 24-240 (see **Zero Retries 0170** - The non Power Players in the 902-928 MHz Band - Meshtastic and Amateur Radio) were from individuals, families, and community's use of Meshtastic as a messaging system that doesn't require any infrastructure. And (unlike Amateur Radio and GMRS) Meshtastic is usable by anyone without regard to having secured a formal license to use it. Many comments about Meshtastic mentioned that they became involved with Meshtastic to be able to use it in an emergency.

Perhaps that argument about keeping 902-928 MHz usable for unlicensed systems like Meshtastic carries more weight now with a visceral example of why unlicensed, ad-hoc data / messaging systems like Meshtastic need a band like 902-928 MHz to operate.

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20th Century Amateur Radio Organizations Struggle in the 21st Century

By Steve Stroh N8GNJ

I posit that Amateur Radio politics within Amateur Radio organizations has a lot to do with the structures of those organizations that were built for the previous century.

Here in Zero Retries, I'm not personally equipped to, or inclined to discuss the vagaries of Amateur Radio politics - until it becomes impossible to ignore and becomes so significant that it's difficult to not mention.

In my opinion, the ARRL, by disqualifying by fiat, three challengers to incumbent directors of ARRL Divisions, is close to, or has become an illegitimate organization, effectively without real representative governance.

Zero Retries Pseudostaffer Dan Romanchik KB6NU tells this story better than I can in his blog post - The ARRL elections this year are a sham:

> I've always recommended that hams join the ARRL, but recent events have certainly tested my resolve. The ARRL seems to lurch from calamity to calamity.
>
> …
>
> The latest debacle is this year's board of directors election. Every year, the ARRL conducts elections for five of the 15 directorships. This year, candidates in three of these elections have been disqualified, for somewhat dubious reasons, in my humble opinion.

> Officially, these candidates were disqualified for violating one of the ARRL's election rules. They all share a common characteristic, though: they are all critical of the current board and CEO, David Minster, NA2AA. Whatever the real reason, these disqualifications have turned this year's elections into a sham.

This issue affected me directly. I advocated for significant change within the ARRL Northwestern Division as, in my opinion, the current director has been ineffectual. Dan Marler K7REX was nominated for Northwestern Division Director, and I endorsed him in **Zero Retries 0166** - ARRL Division Elections - My Endorsements For Northwestern Division.

K7REX was certainly outspoken in his criticisms of the current directions and leadership of the ARRL, and communicated those concerns to the Northwestern Division membership. I read K7REX's points, and agreed with all of them, and the day that voting was opened for Northwestern Division Director, I voted for K7REX. But, never mind, as KB6NU reports:

> **K7REX Disqualified!**
>
> This is another disturbing case. Dan Marler, K7REX, is as good a candidate as you'd want. He currently serves as Idaho Section Manager, has served as Section Emergency Coordinator, and is the founder of the Radio Amateur Training Planning and Activities Committee (RATPAC). He is a retired computer systems administrator for a Fortune-500 company and would bring a much-needed understanding of IT management to the League.
>
> …
>
> In a letter dated September 28, 2024, Dan was disqualified. It's not clear if he was being disqualified for not retracting all of the statements or just the statement about the CEO's salary. In any case, we see again the high-handedness of the E&E Committee, and again I have to say that this all sounds pretty shady to me.

The result of that disqualification isn't that elections for Northwestern Division (and the other divisions where the same thing happened) will be re-opened and conducted again… it's that the incumbent director was declared to be re-elected.

This is a classic case of winning a battle, but ultimately losing a war. This kind of… I'll just say it… *corruption* is corrosive and in a closed system such as ARRL membership, there's effectively no relief as it's unlikely that anyone cares deeply enough to initiate a class action lawsuit to save what, in my opinion, will soon be revealed to be a dying organization as membership numbers (and revenue from "dues") plummets by crisis proportions.

This matters because as much as I am disgusted by this corruption, it's impossible to overlook that ARRL was one of only two national organizations involved with Amateur Radio to file substantive comments in FCC Docket 24-240. There will come a time when ARRL will inevitably contract to the point where it cannot afford full time legal representation in Washington to, among other things, file substantive comments with the FCC and act as a "quick, local response" when issues involving Amateur Radio come up at the FCC.

While I observe this impending collapse within the ARRL, I can't suggest anything to do about it. I don't think ARRL can be fixed, and it certainly seems like the current ARRL leadership doesn't see anything that *needs* to be fixed. The issues with ARRL are, in my opinion, structural from its being founded in the 20th century and that mindset severely contrasting with the realities of the 21st century, such as being a publisher of periodicals behind a paywall, and selling mostly print books in an era where that model of information transmission is rapidly being deprecated. That's just not a sustainable financial model in the 21st century.

This issue isn't confined to ARRL. Two Amateur Radio *technical* organizations have similar structural issues from having been founded (late) in the 20th century - TAPR and AMSAT.

TAPR receives most of its revenue (I've been informed) to sustain its operations by selling small kit products. But in the 21st century, "organizations" like TAPR are no longer required to put such products into the hands of Amateur Radio Operators. There are dozens, perhaps hundreds, of one-person businesses providing products of

similar scope within Amateur Radio. Indeed in the last couple of years, TAPR elected two board members who are such one person businesses. TAPR canceled its beloved Digital Communications Conference (DCC) for 2024, with no information provided about that decision or the future of the DCC. TAPR's primary communications to its audience have diminished to an occasional post on various mailing lists, periodic updates on its website, and a quarterly newsletter. TAPR's quarterly Packet Status Register (PSR) newsletter has always been one of the best parts of TAPR, but a quarterly newsletter in an era of daily YouTube videos really seems out of step with the communications realities (and expectations) of the 21st century.

AMSAT has an even more profound issue of an extremely small membership (if I recall correctly from my last period of membership, around 2000 individuals) and like ARRL, restricts its primary publication behind a paywall. This policy has diminishing returns that if someone interested in satellite communications cannot view "the good stuff" that discusses exactly, and in depth what value AMSAT is to Amateur Radio, they're simply not inclined to join and support AMSAT. And without new members coming into the organization, it's not sustainable in the long term.

Update / Correction - An AMSAT member informed me that AMSAT membership is closer to 4000 individuals, though many of those memberships are Life memberships, thus AMSAT derives no periodic revenue from them.

Counter Examples of New Organizations in the 21st Century

Contrast the above issues with the following examples of organizations founded in the 21st century, taking advantage of the capabilities of the 21st century, without being beholden to the issues of the 20th century such maintaining an expensive headquarters like ARRL versus a virtual organization that 21st century technology has made possible. None of these examples "replace" entirely the "20th century organizations", but they're not attempting to.

SARC Communicator Newsletterzine

Surrey (British Columbia, Canada) Amateur Radio Communications (SARC) bimonthly "newsletterzine" The Communicator is, in my opinion, fully equal to magazines such as QST and the late CQ Magazine. Again, the goal of SARC with The Communicator isn't to rival QST or CQ, but it does serve as an informative, general, interesting, substantive publication that provides a good flavor of Amateur Radio activities, technology, and the general spirit of fun about playing with radio technology with an Amateur Radio license. Unlike ARRL, RAC, RSGB, and AMSAT, it entices those interested in Amateur Radio into Amateur Radio because, if someone is curious about Amateur Radio, all of The Communicator can be read online, for free.

Digital Library of Amateur Radio & Communications (DLARC)

DLARC is a grant funded project of the Internet Archive that is an extensive online archive of Amateur Radio (and radio, and communications, in general) material available for free. All material in DLARC has been digitized and normalized - no oddball formats, and all text materials have been converted to text so that you can do keyword and phrase searches.

NARS - Narwhal Amateur Radio Society, NR7WL

… is a refreshingly different kind of Amateur Radio organization than we're used to.

Purpose

> The Narwhal Amateur Radio Society ("NARS") is an amateur radio club not tied to a particular geographic region, with membership open both to licensed amateur radio operators and those who have not yet chosen to pursue such a license. NARS exists for three main purposes:
>
> - To diversify the field and practice of amateur radio and radio frequency experimentation through education, evangelism, and activism;

- To foster joy, goodwill, understanding, and experiential enlightenment of all people in radio, computer, electronic, and related disciplines; and
- To serve as a stalwart opponent of the use of amateur radio as an accessory to state violence and oppression.

As part of the Narwhal Pincushion, we follow the Narwhal Code of Conduct at all times.

Meshtastic

In creating a system of mesh network communications using unlicensed spectrum, Meshtastic could be thought of as a 21st century equivalent to TAPR being created to popularize and promote packet radio technology within Amateur Radio. Meshtastic is a project, not a product, and a "light" organization - no membership, no dues, no officers, etc. Meshtastic just promotes a new technology for the greater good and experimentation with radio technology by individuals and small groups.

Similar to TAPR's original vision, two decentralized / distributed projects for promoting open source technology involving (sometimes) Amateur Radio are Open Research Institute (ORI) and HamOpen.

It's also becoming more common to, like TAPR's origin, to create new organizations or simply virtual, open source projects for powerful, foundational technology such as as M17 Project, APRS Foundation, DIRE WOLF, G8BPQ BBS, MMDVM, etc.

As for Space Communications, I posit that if someone wants to learn more about hands-on space communications, there's more "entry level", interesting information available on how to "build something involving satellite communications" from SatNOGS and TinyGS than from AMSAT, which mostly offers information about joining the organization than about personal involvement in satellite communications. In fairness, AMSAT-UK provides extensive information about getting involved in Amateur Radio satellite communications on their website that isn't hidden behind a paywall.

A Zero Retries advisor often reminds me that Amateur Radio is merely a microcosm of society, not apart from society. Thus Amateur Radio not immune from, or apart from the severe, compressed, complicated structural changes in society that have been wrought by the introduction of the Internet (and its disruptive business models and social media). So just as we mourn, but move on from the death of a beloved local newspaper or the National Geographic Society becoming just another media brand name, we should accept the wise words of Dr. Suess:

Don't cry because it's over. Smile because it happened.

Leave a comment

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AREDN Production Release 3.24.10.0 is Now Available

By Orv Beach W6BI

(From the AREDN website)

The biggest change in this release if you haven't been keeping tabs on AREDN, is the "new UI". The User Interface or UI is how data is presented to a person. The old UI, written in LUA not only looked old, it was hampering the implementation of new features. Now written in JavaScript, among other things it's more economical on bandwidth used to display the user interface. It's also much easier to add new features. The new UI has taken 6 months and the work of many, many people. We'd like to thank everyone involved with developing, documenting, and especially debugging this; we really appreciate our community!

Because it's new, navigating around it may initially be a challenge. Steve, AB7PA, keeper of the AREDN docs, has done a stellar job in documenting the new UI. It's highly recommended you at least skim them, here: http://docs.arednmesh.org/en/latest/ Within the new UI you will also find a Help button for every dialog. Please press it and read the inline help at least once. Finally, we recorded a walk through of the new UI which you can find here:

(note that there have been a few minor changes since we did this).

After upgrading, you may be returned to the old UI or you might see the new UI. In either case you will see a green button in the upper-right-hand corner of your browser window which lets you toggle between them. In the new UI you will initially be in Guest mode. To log into Admin mode, click on the little guy in the upper-right-hand corner, click on Login and enter the node's password (no need for a user name).

Updating notes

1. Devices running nightly builds will only notify about new nightly builds; going forward the same behavior will hold for devices running production release code; they'll only notify on detection of new production releases. Regardless all builds will be available in a refreshed update list.

2. If a watchdog timer is enabled, recommend disabling during updates. If the watchdog kicks off during an update it could derail the update process.

Enhancements

- New UI. All the enhancements below are in the new UI only. The old UI remains unchanged.

- New custom UI when first installing nodes.

- Ability to remove unused tunnels

- Added a weight to tunnels, now on a per-tunnel basis (the "weight" artificially degrades the tunnel's ETX; if an RF also route exists and its ETX value is better, it will be preferred)

- Themes support: default, high contrast, color-blind, dark, and light.
- Portable themes let you set a theme on your localnode and see it on every other node. So if you're color blind for example, you can set that once and see that theme on every node you visit.
- If a node can get to http://downloads.aredenmesh.org it will indicate if a code update is available. Nightly nodes will be notified of nightly updates, while release nodes will be notified of release updates.
- Added update progress indicator when downloading or uploading firmware.
- Added ability to switch between 12 hour and 24 hour displays
- DHCP aliases are now rewritten when DHCP range changes
- Now show metric units if your locale isn't "en-us" or "en-gb"
- Added the option to prevent LQM from blocking poorly performing links. This allows you to keep LQM active and let it manage link performance, without it shutting down crucial connections.
- Added topic-sensitive help in every configuration dialog.
- Added always-running NTPD option
- Added GPS support (see https://github.com/kn6plv/WhereAndWhen for how to install a GPS receiver) which is shared by all DtD connected nodes.

New Device Support

- Ubiquiti Nanobeam 5AC WA
- Support for newer Mikrotik devices that use the newer Mikrotik v7 bootloader

Fixes and Improvements

- Fixed Ubiquiti AC devices failing WiFi scan if on 10MHz
- Fixed time drifting problem on Basebox 5, QRT 5, non-AC mANT 19S
- User firewall rules are now preserved across upgrades
- Fix supernode locator. Now correctly finds the closest one.

Post-release

Just a heads-up - this is what will happen in the first nightly build after this production release:

- The old UI will be removed from the software. Having both of them there impacts the older 32 MB devices and going forward keeping both UI's compatible isn't possible.
- A secondary NTP server option will be added
- WiFi scanning of non-mesh and multiple wifi devices will be supported
- Support for different wireless WAN client encryptions will be added

Post-release note

Those of you who like to run nightlies may want to hold off for a few releases after this production release; there are a lot of changes queued up for the next nightly build (more than shown above) and there's apt to be some breakage for a bit.

Notes

- The way the tunnel addresses are allocated has changed in the new UI. In some unlikely cases you may need to remove a tunnel and re-add it.
- While we provide both UIs in this release, trying to use both interchangeably can cause problems. Once you start using the new UI, please don't go back and use the old one.
- There remain problems with the TP-Link CPE710.
- GL.iNet GL-B1300 does not support negative channels on the 2.4 GHz band.
- The Litebeam M5 is no longer supported.

Leave a comment

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Join the *Fun* on Amateur Radio

If you're not yet licensed as an Amateur Radio Operator, and would like to join the fun by *literally having a license to experiment with radio technology*, check out
Join the Fun on Amateur Radio for some pointers.

Zero Retries Frequently Asked Questions (FAQs) — In development 2023-02.

Closing the Channel

In its mission to highlight technological innovation in Amateur Radio, promote Amateur Radio to techies as a literal license to experiment with radio technology, and make Amateur Radio more relevant to society in the 2020s and beyond, Zero Retries is published via email and web, and is available to everyone at no cost. Zero Retries is proud *not to participate* in the Amateur Radio Publishing Industrial Complex, which hides Amateur Radio content behind paywalls.

My ongoing ***Thanks*** to:

- Tina Stroh KD7WSF for, well, *everything!*
- ***Annual Founding Members*** **who generously support Zero Retries financially:**
  Founding Member 0000 - Steven Davidson K3FZT (Renewed 2024)

  Founding Member 0001 - Prefers to Remain Anonymous 01 (Renewed 2024)
  Founding Member 0002 - Chris Osburn KD7DVD (Renewed 2024)
  Founding Member 0003 - Don Rotolo N2IRZ (Renewed 2024)
  Founding Member 0004 - William Arcand W1WRA (Renewed 2024)
  Founding Member 0006 - Todd Willey KQ4FID (Renewed 2024)
  Founding Member 0007 - Merik Karman VK1DF / VK2MKZ (Renewed 2024 *with* ***two*** *Founding Member subscriptions!*)
  Founding Member 0008 - Prefers to Remain Anonymous 14
  Founding Member 0009 - Prefers to Remain Anonymous 19
  Founding Member 0011 - Rick Prelinger W6XBE (New 2024)

Founding Member 0012 - Ryan Tolboom N2BP (New 2024)

- Numerous Annual and Monthly subscribers who also generously support Zero Retries financially!

Want to Support Zero Retries?

- The *most* effective way to support Zero Retries is to simply mention Zero Retries to your co-conspirators that are also interested in knowing more about technological innovation that is occurring in Amateur Radio and encourage them to become a fellow subscriber.

- One particularly effective method of promoting Zero Retries is to add a mention of Zero Retries to your QRZ page (or other web presence) and include a link:

  https://www.zeroretries.org

- If you'd like to financially support Zero Retries, becoming a paid subscriber is *greatly* appreciated and helps offset expenses incurred in publishing Zero Retries. Paid subscriptions for Zero Retries are *entirely optional*, as explained in this special issue of ZR:
  Zero Retries Administrivia - Activating Payment Options.

These blogs and newsletters regularly feature Zero Retries Interesting content:

- Dan Romanchik KB6NU mentions "Zero Retries Interesting" topics so regularly on his blog (that I otherwise wouldn't know about) that I've bestowed on him the honorific of Pseudostaffer.

- Jeff Davis KE9V also mentions "Zero Retries Interesting" topics so regularly on his blog (that I otherwise wouldn't know about) that I've bestowed on him the honorific of Pseudostaffer.

- Amateur Radio Weekly by Cale Mooth K4HCK is a weekly anthology of links to interesting Amateur Radio stories that often feature "Zero Retires Interesting" topics.

- Experimental Radio News by Bennet Z. Kobb AK4AV discusses (in detail) Experimental (Part 5) licenses issued by the US FCC. It's a *must-read-now* for me!

- RTL-SDR Blog - *Excellent* coverage of Software Defined Radio units.

- TAPR Packet Status Register has been published continuously since 1982.

- Hot Iron - The Journal of the Constructor's Club is a delightful quarterly newsletter.

- Other Substack Amateur Radio newsletters recommended by Zero Retries.

These YouTube channels regularly feature Zero Retries Interesting content:

- HB9BLA Wireless by Andreas Spiess HB9BLA

- KM6LYW Radio by Craig Lamparter KM6LYW (home of the DigiPi project)

- Modern Ham by Billy Penley KN4MKB

- Tech Minds by Matthew Miller M0DQW

These podcasts regularly feature Zero Retries Interesting content:

- Store and Forward - a podcast about the past and future of amateur radio, by Kay Savetz K6KJN (curator of the Digital Library of Amateur Radio and Communications) and Steve Stroh N8GNJ (Editor of Zero Retries).

- Ham Radio Workbench by George Zafiropoulos KJ6VU (and friends)

- Foundations of Amateur Radio by Onno Benschop VK6FLAB

If you're reading this issue on the web and you'd like to see Zero Retries in your email Inbox every Friday afternoon, just click below to join ***2100+*** other subscribers:

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If you're a fellow smart person that uses **RSS**, there *is* an **RSS feed for Zero Retries**.

Social Media:

Zero Retries (N8GNJ) is on Mastodon — n8gnj@mastodon.radio — just click:

Zero Retries / N8GNJ on Mastodon

Zero Retries (N8GNJ) is also on Bluesky — @n8gnj — just click:

Zero Retries / N8GNJ on Bluesky

Email issues of Zero Retries are "instrumented" by Substack to gather basic statistics about opens, clicking links, etc.

More bits from Steve Stroh N8GNJ:

- **SuperPacket blog** — *Discussing new generations of Amateur Radio Data Communications - beyond Packet Radio (a precursor to Zero Retries)*
- **N8GNJ blog** — *Amateur Radio Station N8GNJ and the mad science experiments at N8GNJ Labs in Bellingham, Washington, USA*

Thanks for reading!
Steve Stroh N8GNJ / WRPS598 (He / Him / His)
These bits were handcrafted (by a mere human, not an Artificial Intelligence bot) in beautiful Bellingham (The City of Subdued Excitement), Washington, USA, and linked to the Internet via **Starlink *Satellite* Internet Access**.

2024-10-04

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Footnotes for this Issue

[1]

This wide area communications capability via Satellite has been, to some extent, filled by Iridium. But Iridium's payment structure is just too inflexible and expensive to be (widely) usable by individuals. You only use Iridium if you have no other choice, and the hardware and service fee is expensive. Thus unless you have an organization like FEMA paying for the hardware and service fees, and prepositioning Iridium units, (or you have personal deep pockets to be able to afford it), Iridium isn't a reasonable choice for "civilians".